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PATENT
Docket No. 72145.011600/US**REMARKS**

In this response, claims 13, 17, and 21 have been amended, and no claims have been added or canceled. Thus, claims 1-26 remain pending. The office action issued by the Examiner has been carefully considered.

The abstract and disclosure have been amended and are now believed to satisfy the Examiner's request.

Claims 13, 17, and 21 have been amended merely to correct simple typographical errors. No narrowing of claim scope is intended by any of these amendments.

Claims 1-6, 8-10, 12-16 and 21-26 have been rejected under 35 USC sec. 102(b) as being anticipated by Lee et al. (U.S. Patent No. 5,585,210). Anticipation requires that every element of a claim be disclosed in a single prior art reference.

Applicant's independent claim 1 recites a photomask used to form both a full-depth feature and a partial-depth feature. Applicant's specification describes (at page 1, line 23, to page 2, line 3) that a structural feature such as a hole that penetrates completely through a layer is a full-depth feature. In contrast, a partial-depth feature does not penetrate completely through the layer.

The Examiner has cited Lee as disclosing every element of Applicant's claim 1. This would, of course, include a photomask that can be used to form a partial-depth feature. Yet, Lee does not anywhere describe a partial-depth feature. Instead, Lee describes the formation of full-depth features (i.e., fine patterns) and the improvement of the edge profile of these full-depth features. For example, Lee's FIGs. 10-15 illustrate holes formed in a resist layer (i.e., full-depth features) and the effect of Lee's invention on the edge profile of these holes.

The variation of the edge profile of a hole or full-depth feature using a photomask having added portions of mask patterns is not at all the same as forming a partial-depth feature. The

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additional mask patterns in Lee are added to the mask to effect a variation in patterning of a layer, but Lee does not describe, recognize, or suggest that such additional mask patterns could be used to form a partial-depth feature (e.g., a hole that only partially penetrates a layer).

The Examiner seems to be confusing the addition of some mask patterns with smaller geometries to a photomask with the actual formation of a partial-depth feature. Upon close examination of Lee, it is clear that Lee only describes the formation of holes in a layer. For example, Lee's FIGs. 10-15 each show the full penetration of the resist layer being patterned. Each time that Lee's photomask and method is used the result is a full-depth feature with an improved edge profile and not a partial-depth feature.

Certainly the Examiner is not attempting to argue that the edge of a full-depth feature is itself a partial-depth feature. This would not be consistent with Applicant's specification. Note also that Applicant's claim 1 preamble describes the partial-depth feature as having a depth substantially less than the film thickness, and the full-depth feature having a depth approximately equal to the film thickness. Applicant has described partial-depth and full-depth features as separate features, and not as one integral, blended feature formed using different portions of a photomask.

Applicant's claim 1 further recites that the photomask includes both a full-depth producing pattern and a partial-depth producing pattern. The Examiner is directed to the use of the work "producing". Lee has only described and illustrated full-depth features. The Examiner appears to be relying on selected geometries in Lee's photomask pattern relative to the patterning resolution capability of the patterning process to argue that a partial-depth producing pattern is described. However, in the absence of any description or illustration of any type by Lee of a separate partial-depth feature, Lee cannot be considered to disclose a partial-depth producing pattern. The Examiner points to Lee's photomask geometries, but is not able to identify any actual partial-depth pattern that can be produced by Lee's mask or method.

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Applicant's independent claim 9 recites the forming of a partial-depth feature in a film and further recites a photomask having a partial-depth producing pattern. As discussed above, Lee does not anywhere describe a partial-depth feature that is formed.

Applicant's independent claim 13 and 21 also each recite a photomask having a partial-depth producing pattern. Applicant's independent claim 24 recites forming a feature that penetrates only partially through a polymer film layer. Again, as discussed above, Lee does not disclose the formation of a partial-depth feature.

Claims 1-6, 8-10, and 12-26 have been rejected under 35 USC sec. 102(b) as being anticipated by Han et al. (U.S. Patent No. 5,725,973).

Han is directed to a photomask and method to form full-depth features in photoresist. No separate partial-depth features are ever formed. Indeed, Han's object is to exactly transfer a mask pattern shape onto a substrate (see Han's abstract). On the other hand, Applicant's specification describes forming partial-depth features that are not generally the exact shape of any of the photomask patterns used to form the features. Thus, Han's method does not at all describe, and even teaches away from, Applicant's inventive approach.

More specifically, as was discussed above, Applicant's independent claim 1 recites a photomask used to form both a full-depth feature and a partial-depth feature. A structural feature that penetrates completely through a layer is a full-depth feature. A partial-depth feature does not penetrate completely through the layer.

Similarly as was discussed above for Lee, Han simply does not show a partial-depth feature. Instead, Han shows holes in a layer that have variations imparted to their perimeter or edge regions. For example, Han's FIGs. 7, 10, and 13 show such holes illustrated by contour lines describing the variations made to these edge regions. These edge regions are not partial-depth features, but merely a part of the full-depth feature formed.

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Applicant's independent claim 17 recites a photomask having a partial-depth producing pattern, which is not disclosed by Han. Applicant's independent claims 9, 13, 21 and 24 also recite features, as were discussed above with respect to Lee, which are not disclosed by Han.

Claims 7 and 11 have been rejected under 35 USC sec. 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 5,585,210). An obviousness rejection requires that there be some suggestion or desirability in the prior art supporting a combination of references.

Applicant's claims 7 and 11 depend from Applicant's independent claims 1 and 9 discussed above, which each recite a partial-depth producing pattern. The use of a chrome material in a photomask does not itself necessarily result in a partial-depth feature. Also, the selection of a given geometric shape does not itself necessarily result in a partial-depth feature. Lee simply provides no teaching or suggestion to form a partial-depth feature, and one of ordinary skill in the art would not have any motivation to use or modify Lee to form a partial-depth feature, whether by using circles or any another geometric pattern. Lee doesn't even recognize it as a possibility.

Claims 7 and 11 have been rejected under 35 USC sec. 103(a) as being unpatentable over Han et al. (U.S. Patent No. 5,725,973) in view of Lee et al. (U.S. Patent No. 5,585,210).

As was mentioned above, Applicant's claims 7 and 11 depend from Applicant's independent claims 1 and 9, which each recite a partial-depth producing pattern. Han does not suggest forming any partial-depth feature and teaches away from such a process by teaching the transfer of an exact pattern shape. Thus, Lee does not supply the missing teachings discussed above with respect to Applicant's claims 7 and 11.

Applicant's claims 2-8, 10-12, 14-16, 18-20, 22, 23, 25, and 26 depend, directly or indirectly, from independent claims 1, 9, 13, 17, 21, and 24 and are believed allowable for at least the reasons discussed above.

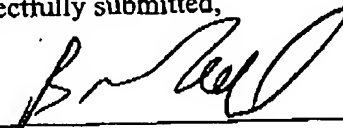
In view of the above, Applicant respectfully requests the reconsideration of this application and the allowance of all pending claims. It is respectfully submitted that the

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Examiner's rejections have been successfully traversed and that the application is now in order for allowance. Applicant believes that the Examiner's other arguments not discussed above are moot in light of the above arguments, but reserves the later right to address these arguments. Accordingly, reconsideration of the application and allowance thereof is courteously solicited.

Respectfully submitted,



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